

A New Articulate Brachiopod from the Lower Cambrian Latham Shale, Southeastern California

The lower Cambrian Latham Shale of Hazzard (1954) crops out at localities scattered widely throughout the Mojave Desert of southeastern California. Although the formation is highly fossiliferous, descriptive paleontologic documentation of its fauna is limited to a very few reports (Resser 1928; Crickmay 1933; Riccio 1952) dealing mainly with the abundant and diverse assemblage of trilobites. Other notes (Hazzard 1933, 1954; Mount 1974b, 1976) have touched on the stratigraphic allocation of some of the trilobite and non-trilobite taxa.

The purpose of the present report is to provide the description of a new species of *Nisusia*, the only brachiopod of the Class Articulata known to occur in the Latham Shale. *Nisusia* Walcott 1905:247, is the earliest and most primitive articulate brachiopod genus and is recorded from the lower and middle Cambrian of North America, Asia, and Europe. The discovery of the new taxon from the Latham Shale provides one of the oldest known records of the genus from the Cordilleran area.

References to the Department of Earth Sciences, University of California, Riverside, are hereafter abbreviated as UCR.

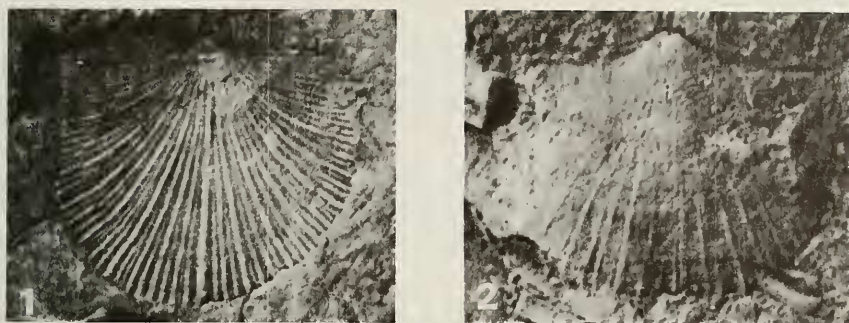
Order Orthida
Family Nisusiidae
Genus *Nisusia* Walcott, 1905
Nisusia fulleri new species
Figures 1-2

Nisusia n. sp.: Mount 1974c, p. 47, pl. 1, figs. 1, 2; Mount 1976, p. 176, fig. 4.

Diagnosis.—The new species is distinguished from all other species of the genus by having the following combination of characteristics: shell medium in size, transversely subrectangular, greatest width at the hinge; sulcus shallow and wide; ornamentation of numerous, narrow, low costellae of three different strengths, with narrow interspaces.

Description.—Shell medium in size for the genus, apparently thin; outline transversely subrectangular, wider than long with the greatest width at the hinge and maximum length at mid width; cardinal extremities nearly rectangular; lateral margins nearly straight or slightly convex; anterior margin broadly rounded. Sulcus apparently very shallow and wide, originating in anterior third of shell and extending to anterior margin. Umbo short, widely convex, moderately swollen and protruded posterior to the posterior margin; apical angle 112°. Interarea narrow and apparently aplanate. Ornamentation consists of numerous, somewhat regularly arranged, low, narrow, rounded costellae of three different strengths, gauging 4 per mm on the holotype; separated by very narrow interspaces with widths from 1/3 to 1 times the width of the costellae. Surface marked by numerous, fine, slightly raised concentric lines of growth. Interior characteristics unknown.

Holotype.—UCR 10/2031, length 6.5 mm, width 8.0 mm, brachial valve?



Figs. 1–2. *Nisusia fulleri* Mount, new species, holotype UCR 10/2031, brachial? view, $\times 5$. (2) *Nisusia fulleri* Mount, new species, paratype UCR 10/2019, pedicle? view, $\times 3$.

Paratypes.—UCR 10/2019, length 11.3 mm, width 15.0 mm, pedicle valve? UCR 10/2032, eight partial valves on one piece of shale. UCR 10/2037, length 11.0 mm, width 12.3 mm, pedicle valve?

Type locality.—UCR locality 10; at elevation of 1160 ft (305 m), 100 m west of old quarry at the southern end of the Marble Mountains, San Bernardino County; 125 m west and 650 m south of northeast corner of Sec. 11, T.5N., R.14E., Danby 15' quadrangle (1956 edition); same as locality M-5 of Hazzard (1933).

Stratigraphic position.—The type locality is in the middle one-third of the Latham Shale which is 15 m thick at the site.

Associated fauna.—Anthozoa: *Bergaueria radiata* Alpert

Inarticulata: *Paterina prospectensis* (Walcott), *Mickwitzia occidentis* Walcott

Mollusca: *Hyoilithes whitei* Resser

Annelida: new genus and species (Mount 1976, fig. 20)

Trilobita: *Olenellus clarki* (Resser), *O. fremonti* Walcott, *O. gilberti* Meek, *O. mohavensis* (Crickmay), *O. nevadensis* (Walcott), *O.* new species (Mount 1976, fig. 11), *Bristolia anteros* Palmer, *B. bristolensis* (Resser), *B. insolens* (Resser), *B.* new species (Mount 1976, fig. 17), *Peachella iddingsi* (Walcott), *Onchocephalus* new species (Mount 1976, fig. 18)

Malacostraca: *Anomalocaris canadensis* Whiteaves

Eocrinoidea: *Gogia ojenai* Durham

Age.—Late Early Cambrian; *Bristolia* Subzone of Mount (1974a, b), *Bonnia-Olenellus* Zone of Rasetti (1951), Waucoban Stage.

Discussion.—*Nisusia fulleri* new species bears similarity in general form and outline to *N. bivia* (Walcott 1912:750) from the lower Cambrian portion of the Carrara Formation in the Resting Springs Range, Inyo County, California, but differs in details of surface sculpture. The latter species has coarser, wider spaced costellae with fine radial lines superimposed on the primary costellae.

Nisusia montanaensis Bell 1941:238, from the middle Cambrian of Montana, has the fine sculpture of *N. fulleri*, however, it is larger, more quadrate, and the hinge line is slightly less than the width of shell at the middle.

Nisusia festinata (Billings 1861:10), the type species for the genus, from the lower Cambrian of eastern North America is closely similar to the new form described here. The former taxon is spino-costellate and appears to have costellae of more even size and a narrower, deeper sulcus.

Nisusia kotujensis Andreeva 1962:87 from the lower Cambrian of the Siberian Platform of eastern Asia is distinguished from the new California species by having coarser costellae and narrower interspaces in proportion to the width of the costellae. Moreover, the hinges are extended into elongated cardinal extremities.

Nisusia mantouensis Resser and Endo 1937:141 and *N. nasuta ramosa* Nikitin 1956:19 from the middle Cambrian of central Asia have some resemblance to *N. fulleri*, however, these Asian species have coarser sculpture, a deeper sulcus and more rounded extremities.

Etymology.—The new brachiopod is named for Mr. James E. Fuller of the University of California, Riverside, who collected the holotype and one of the paratypes.

Acknowledgments

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